

JAN 29 2009

Application Serial No. 10/572,725
Reply to office action of November 25, 2008

PATENT
Docket: CU-4700

REMARKS/ARGUMENTS

Reconsideration is respectfully requested.

Claims 1-20 are pending before this amendment. By the present amendment, claims 1-20 are amended. No new matter has been added.

In the office action (page 3), claim 20 stands rejected under the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 12 in U.S. Patent No. 7,432,768.

The applicants respectfully disagree and submit that claim 20, as it now stands, is in condition for allowance.

First, a terminal disclaimer in compliance with 37 CFR 1.321(c) has been provided and attached hereto. Second, the originally claimed subject matter of claim 20 has been subsequently amended into independent claims 1, 3, 8, and 13. Third, claim 20, which still depends upon independent claim 1, has been subsequently amended to require that the --receive amplifier has either a common gate amplifier configuration or a cascode amplifier configuration--. Support can be found at FIGs. 4 and 5. Therefore, withdrawal of the rejection is respectfully requested.

In the office action (page 5), claims 1-15 and 17-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 7,089,032 (Hongo) in view of U.S. Patent No. 7,085,587 (Oono) and further in view of U.S. PG-Publication No. 2004/0048591 (Kim).

The applicant respectfully disagrees with this rejection and submits that the claims, as they now stand, are in condition for allowance.

As noted above, the originally claimed subject matter of claim 20 has been subsequently amended into independent claims 1, 3, 8, and 13. In particular, the examiner's attention is respectfully directed to the following newly added limitations now found in independent claims 1, 3, 8, and 13 that now require that:

- the frequency synthesizer or a base band processor comprises:
 - a phase frequency detector (PFD) receiving a reference frequency (f_{REF}) signal and an N-divider frequency (f_{DIV}) signal;
 - a current pump (CP) operatively coupled to the PFD; a low pass

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filter (LPF) operatively coupled to the CP wherein the LPF provides the VAT signal;

a digital tuner (DT) operatively coupled to the CP and to the LPF such that the DT and LPF are parallel to each other wherein the DT provides the VDT signal;

a digital analog tuning voltage controlled oscillator (DAT-VCO) operatively coupled to the LPF and to the DT wherein the DAT-VCO providing a resonant frequency (f_{LO}) signal, a f_{VCO} signal and the f_{DIV} signal in response to the VAT and VDT signals, the DAT-VCO outputting the f_{LO} such that a frequency of the f_{LO} is controlled by the VAT and VDT signals; and

an N divider receiving the f_{VCO} signal from the DAT-VCO and transmitting the f_{REF} to the PFD; --.

Support is found in now canceled claim 20 and in FIG10. Further, the examiner's attention is respectfully directed to the terminal disclaimer to obviate a double patenting rejection over a prior art patent attached in the appendix of this filed response.

Hongo is unlike the presently claimed invention. At most Hongo discloses a radio transmitting/receiving device that has "a frequency synthesizer part 140 and 141 which generates a number of frequencies by their switching to effectively share frequency channels assigned to the system" (Hongo col. 7, lines 6-9). As noted before, Hongo only sends a signal to the VCO 141, 143 from the PLL 140, 142; and the MIXERS 123, 124 or 112 are controlled only by that signal from the amplifier 122 and from the signal from the VCO 141, 143. Further, the high frequency amplifier 122 of Hongo receiving the radio frequency signal from the antenna 151 is not configured to be controlled by the frequency control signal. Hongo does not even hint at a frequency synthesizer or a base band processor having a phase frequency detector (PFD) as now required in independent claims 1, 3, 8, and 13. Therefore, Hongo is considerably unlike the presently claimed invention.

Oono is also considerably different than the presently claimed invention. Oono at most discloses a direct conversion system for directly down-converting a received signal to a baseband signal (I/Q) in which a signal processing semiconductor integrated circuit device and wireless communication system that directly down-converts a received signal to a baseband signal (I/Q) of a voice frequency to achieve demodulation. As noted before the reception-system circuit 110 of Oono comprises a low noise amplifier (LNA or 112) which amplifies a received signal; a mixer (MIX 113) which combines the

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amplified received signal with a local oscillation signal whose frequency is divided into the same frequency as the received signal which directly down-converts it into a voice frequency baseband signal and demodulates it; a high gain programmable gain amplifier unit (PGA 115) having low-pass filters (LPF) that amplifies the signal to predetermined levels; an auto calibration circuit 117 which effects DC offset calibration of the PGA 115; a controller 118 which effects operational control on the receptor-system circuit based on a command; and a transmission-system circuit 130 (col. 6, lines 7-23). Oono also does not even hint at a frequency synthesizer or a base band processor having a phase frequency detector (PFD) as now required in independent claims 1, 3, 8, and 13. Therefore, Oono is considerably unlike the presently claimed invention. Therefore, combining Oono with Hongo does not cure the above noted deficiency of Hongo in replicating the presently claimed invention.

Kim is also considerably different than the presently claimed invention. Kim at most discloses a multiband transmitting and receiving apparatus that uses a control voltage of a phase locked loop to control other components such as a voltage controlled oscillator (VCO) of a multiband RF transceiver. Kim also does not even hint at a frequency synthesizer or a base band processor having a phase frequency detector (PFD) as now required in independent claims 1, 3, 8, and 13. Therefore, Kim is considerably unlike the presently claimed invention. Therefore, combining Kim with Hongo and Oono still does not cure the above noted deficiency of Hongo and Oono in replicating the presently claimed invention.

Therefore, Hongo, Oono and Kim, in whole or in combination, cannot support an obviousness rejection to claims 1-15 and 17-19, because Hongo, Oono and Kim, in whole or in combination, do not teach or suggest all of the limitations required in the presently claimed invention. Therefore, withdrawal of the obviousness rejection is respectfully requested.

In the office action (page 8), claim 16 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hongo in view of Oono, Kim and further in view of U.S. Patent No. 7,299,018 (Van Rump).

The applicants respectfully disagrees with this rejection and submits that claim

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16, as it now stands, is in condition for allowance.

The above comments are equally applicable here in that Hongo, Oono and Kim, in whole or in combination, do not teach or suggest all of the limitations required in the presently claimed invention.

Van Rumpt is also considerably different from the presently claimed invention. At most Van Rumpt discloses a LC tank including a capacitor controlled by a digital frequency control signal, a capacitor controlled by the analog frequency control signal and a fixed capacitor. As noted before, Van Rumpt discloses a RF input filter having a digitally controlled capacitor bank with n number of capacitors being controlled by a tuning control signal for varying the tuning frequency of the RF input filter within a tuning range (Van Rumpt Abstract, FIG. 1A, 3 and 7). Van Rumpt also does not even hint at a frequency synthesizer or a base band processor having a phase frequency detector (PFD) as now required in independent claims 1, 3, 8, and 13. Therefore, Van Rumpt is considerably unlike the presently claimed invention. Therefore, combining Van Rumpt with Hongo, Oono and Kim still does not cure the above noted deficiency of Hongo, Oono and Kim in replicating the presently claimed invention.

Therefore, Hongo, Oono, Kim, and Van Rumpt in whole or in combination, cannot support an obviousness rejection to claim 16, because Hongo, Oono, Kim, and Van Rumpt, in whole or in combination, do not teach or suggest all of the limitations required in the presently claimed invention. Therefore, withdrawal of the obviousness rejection is respectfully requested.

In the office action (page 9), claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hongo in view of Oono, Kim and further in view of U.S. PG-Publication No. 2003/0119467 (Welland).

The above comments are equally applicable here in that Hongo, Oono and Kim, in whole or in combination, do not teach or suggest all of the limitations required in the presently claimed invention.

Welland is also different from the presently claimed invention. At most Welland discloses an apparatus for operating a PLL for synthesizing high-frequency signals for wireless communications. As can be seen in Welland's FIG. 5 the discrete control block

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502 is shown connected to the divide-by R counter 204 and connected to the divide-by-N counter 214, in which the discrete control block 502 provides a digital control word 404 to the digital and analog controlled VCO 400, a START signal 506 to change switch 512 so that it deselects the control node 510. Welland

Welland also does not even hint at a frequency synthesizer or a base band processor having a phase frequency detector (PFD) as now required in independent claims 1, 3, 8, and 13. Therefore, Welland is considerably unlike the presently claimed invention. Therefore, combining Welland with Hongo, Oono and Kim still does not cure the above noted deficiency of Hongo, Oono and Kim in replicating the presently claimed invention.

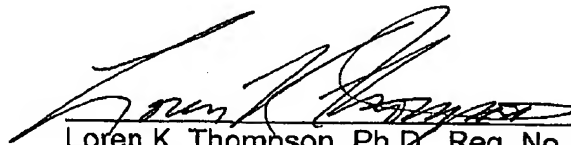
Therefore, Hongo, Oono, Kim, and Welland in whole or in combination, cannot support an obviousness rejection to claim 16, because Hongo, Oono, Kim, and Welland, in whole or in combination, do not teach or suggest all of the limitations required in the presently claimed invention. Therefore, withdrawal of the obviousness rejection is respectfully requested.

For the reasons set forth above, the applicants respectfully submit that claims 1-20, now pending in this application, are in condition for allowance over the cited references. Accordingly, the applicants respectfully request reconsideration and withdrawal of the outstanding rejections and earnestly solicit an indication of allowable subject matter.

This amendment is considered to be responsive to all points raised in the office action. Should the examiner have any remaining questions or concerns, the examiner is encouraged to contact the undersigned attorney by telephone to expeditiously resolve such concerns.

Respectfully submitted,

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APPENDIX OF ATTACHMENTS

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**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION
OVER A PRIOR PATENT**